



## *A Message from the Dean*

At San Francisco State's College of Science and Engineering, students find faculty who encourage breaking traditional barriers. The faculty of the College are committed to creating and maintaining connections with our students, other scientists and engineers, and to the scientific community of the Bay Area. In so doing, we act as the vital link connecting students to the world of science.

The college is committed to the philosophy that the best education of its students comes through involvement in research and the solution of real-world problems.

To carry out that objective, we must recruit and retain outstanding scientists and engineers to our faculty and be able to offer them and their students the most advanced facilities and equipment possible.

In addition to our active research faculty, we have many state-of-the-art facilities and research centers that offer unique research experiences for students at all levels, from undergraduate to post-doc: the Conservation Genetics Laboratory, the Romberg Tiburon Center for Environmental Studies, a DNA analysis facility, a Thin Film Laboratory, an electron microscope facility, a computational chemistry and visualization laboratory, a molecular biology core facility, and the Nuclear Magnetic Resonance Center.



## **A Setting That's Ideal**

Few places in this country can match the San Francisco Bay Area for the depth and caliber of scientific and technological research.

The College of Science and Engineering endeavors to help its students benefit from this distinctive environment. Our students learn through research opportunities, internships, cooperative education, and other training placements.

We offer a strong and diverse faculty, many of whom are experts from industry or the research community, with a growing staff of minority and women professors and mentors, an important component of an urban university.

Many of our students are first-generation Americans. Many are the first in their families to go to college. More than half of our students are members of minority groups, and one quarter are from groups traditionally underrepresented in engineering and the sciences.

Providing the means for people of exceptionally diverse backgrounds to come into their own is a major part of San Francisco State's identity as an urban university. The College of Science and Engineering has been a leader in increasing the number of underrepresented minority students in science- and mathematics-based fields, from elementary to graduate school.



**THANK YOU**  
for volunteering your time as  
the JUDGES  
of the COSE Student Project Showcase!

Alegra Eroy-Reveles	Hao Jiang
Alvaro Padilla	Jane DeWitt
Aman Singh	Javier Arsuaga
Andy Bolig	Jeff Greensite
Andy Zink	José de la Torre
Angie Perez	José Lopez
Ann Todgam	Kai Kohlhoff
Anna Ureta	Ken Hitchner
Anne Krause	Mike Strange
Anton Guliaev	Ray Trautman
Blake Riggs	Robert Jan Visser
Daniel Hostetter	Robert Levenson
David Bao	Sally Pasion
David Meredith	Santiago Perez
Ezekiel Robles	Terry Mancilla
Frank Cipriano	Toby Garfield
Gary Thompson	Tom Holton
Gustavo Benedicty	Vance Vredenburg
Hamid Mahmoodi	Weining Man

## **PROGRAM**

### **GYMNASIUM 100**

**3:00 pm**

Student Project Showcase Begins

### **SCIENCE BUILDING 201**

**6:00 pm**

Reception

**6:30 pm**

Welcome from Dean Sheldon Axler

**6:40 pm**

Expository Presentation

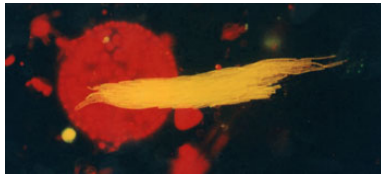
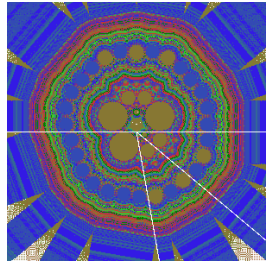
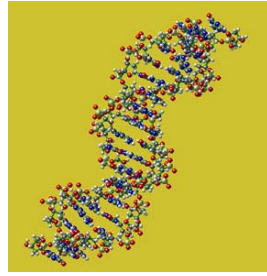
“ ”

By Dr. Teaster Baird

Department of Chemistry & Biochemistry

**7:00 pm**

Announcement of Showcase Winners



**Project #10: Horace Mann's Girl Science Club in Action**  
SFSU Graduate Students: Peace Esonwune (Biology) and Rebecca Garcia (Biology)  
SFUSD Teachers: Dinorah Salazar and Susan Watson, Horace Mann Middle School  
SFSU Faculty Advisor: Dr. Kimberly D. Tanner (Spectrum Program)

**Project #11: Promoting Science Education for Girls at James Lick Middle School**  
SFSU Undergraduate Student: Baouyen Tran (Cell & Molecular Biology)  
SFSU Graduate Student: Martha Velez (Biology)  
SFUSD Teachers: Mazzy Thompson and Allison Serkes, James Lick Middle School  
SFSU Faculty Advisor: Dr. Kimberly D. Tanner (Spectrum Program)

**Project #12: GRLS: Girls Representing in Life Science at Mission High School**  
SFSU Undergraduate Student: Aerial Lomack (Biology)  
SFSU Alumna: Diana Marina (Biology)  
SFUSD Teachers: Rebecca Fulop and Lindsay Penrose, Mission High School  
SFSU Faculty Advisor: Dr. Kimberly D. Tanner (Spectrum Program)

**Project #13: Girls Inspiring Science**  
SFSU Undergraduate Student: Sara Bravo (Microbiology)  
SFSU Post-Bac: Reyna Menjivar (Biology)  
SFUSD Teacher: Jocelyn Ting, Parkway Heights Middle School  
SFSU Faculty Advisor: Dr. Kimberly D. Tanner (Spectrum Program)



## Projects #1 - 75 are from Graduate Students

**Project #4: Explorations in 6<sup>th</sup> Grade Earth Science at  
Lawton Alternative School**

SFSU Graduate Student: Gwen Conahan (Biology)

SFUSD Teacher: Marlies Lewis, Lawton K-8 Alternative School

SFSU Faculty Advisors: Dr. Katharyn Boyer and Dr. Kimberly D. Tanner  
(SEPAL Teaching Assistantship Program)

**Project #5: Can Specific Equity Strategies Reduce  
the Gender Participation Gap?**

SFSU Graduate Student: Thomas Jenkinson (Biology)

SFUSD Teacher: Priscilla Owren, Horace Mann Middle School

SFSU Faculty Advisors: Dr. Dennis Desjardin and Dr. Kimberly D. Tanner  
(SEPAL Teaching Assistantship Program)

**Project #6: 11<sup>th</sup> & 12<sup>th</sup> Grade Environmental Science with  
Balboa High School's WALC Program**

SFSU Graduate Student: Kate Magary (Geosciences)

SFUSD Teacher: Billy Caudy, Balboa High School

SFSU Faculty Advisors: Dr. John Caskey and Dr. Kimberly D. Tanner  
(SEPAL Teaching Assistantship Program)

**Project #7: Lessons Learned in the 7<sup>th</sup> Grade:  
SEPAL Partnership at Horace Mann Middle School**

SFSU Graduate Student: Brennan Wenck (Biology)

SFUSD Teacher: Shancha Lei, Horace Mann Middle School

SFSU Faculty Advisors: Dr. Dennis Desjardin and Dr. Kimberly D. Tanner  
(SEPAL Teaching Assistantship Program)

**Project #8: 7<sup>th</sup> Graders Doing Science at Aptos Middle School**

SFSU Student: Elise Laetz (Zoology)

SFUSD Teacher: James Stewart, Aptos Middle School

SFSU Faculty Advisor: Dr. Kimberly D. Tanner  
(Science Partners in K-12 Education Program)

**Project #9: Science Prodigies**

SFSU Students: Chi Hoang (Physiology) and Susan Saechao (Physiology)

SFUSD Teachers: Cheryl McCue and Jen Jordan, West Portal Elementary

SFSU Faculty Advisor: Dr. Kimberly D. Tanner  
(Science Partners in K-12 Education Program)

Entry Number: 1 GL  
**FEASIBILITY OF USING SALIVA AS A BIOSPECIMEN FOR  
BREAST CANCER SCREENING IN WOMEN**

By: Cathy Samayoa

Cell and Molecular Biology

Faculty Advisor: Dr. Leticia Marquez-Magana

Entry Number: 2 GL  
**THE ROLE OF Nkx2-1 IN THE DEVELOPMENT OF  
THE VENTROMEDIAL HYPOTHALAMUS**

By: David Newstrom

Cell and Molecular Biology

Faculty Advisor: Dr. Carmen R. Domingo

Entry Number: 3 GL  
**Fic1-DEFICIENT MOUSE AS A MODEL OF  
CHOLESTATIC DISEASE**  
By: Jacquelynn R. Robinson, Ukina Sanford, and Laura N. Bull  
Cell and Molecular Biology  
Faculty Advisor: Dr. Frank Bayliss

Entry Number: 4 GL  
**ECTODERM CELLS EXPRESS PRIMARY CILIUM AND  
MECHANOTRANSDUCE CALCIUM AND NITRIC OXIDE SIGNALS**  
By: Remy Vianney Binder, Seung Jong Lee, and Dr. Wilfred Denetclaw  
Cell and Molecular Biology  
Faculty Advisor: Dr. Wilfred Denetclaw

Entry Number: 5 GL  
**REGULAR SPATIO-TEMPORAL PATTERNS IN  
MULTIPLE PROTEIN FOLDING TRAJECTORIES**

By: Saurabh Subodh Gupte

Computer Science

Faculty Advisor: Dr. Hui Yang

Entry Number: 6 GL  
**DYNAMIC PATTERNS OF ECTODERMAL NO AND Ca<sup>2+</sup>-I LEVELS  
REGULATE NO SIGNALING ACTIVITIES TO THE PARAXIAL  
MESODERM FOR MYOGENESIS IN CHICKEN EMBRYOS**

By: Seung Jong Lee  
Cell and Molecular Biology  
Faculty Advisor: Dr. Wilfred Denetclaw

Entry Number: 7 GL  
**IDENTIFICATION OF A SECOND SITE SUPPRESSOR OF  
*cdc24* IN *SCHIZOSACCHAROMYCES POMBE***

By: Shani Chapman  
Cell and Molecular Biology  
Faculty Advisor: Dr. Sally Pasion

Entry Number: 8 GL  
**ECTODERMAL SPHINGOMYELIN IN LIPID RAFTS REGULATE  
MYOGENESIS IN CHICKEN EMBRYOS IN CONJUNCTION WITH  
NO SIGNALING**

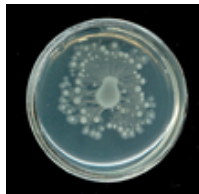
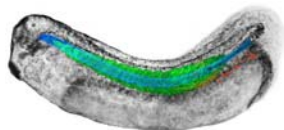
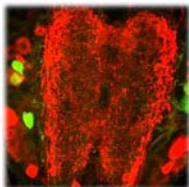
By: Tenzin Bhutia  
Cell and Molecular Biology  
Faculty Advisor: Dr. Wilfred Denetclaw

Entry Number: 9 GL  
**GENETIC DISSECTION OF UVB SIGNALING PATHWAYS IN  
ARABIDOPSIS THALIANA**

By: Tyra McCray, Dr. Zeng-Hui He, Hongyun Tong, Xuefeng Sun, Gigi  
Yen, Huan Jin, Amy Sheldon, Dr. Colin Leasure  
Cell and Molecular Biology  
Faculty Advisor: Dr. Zheng Hui He

Entry Number: 10 GL  
**A NEED FOR NEW THERAPIES TO TREAT  
MYOCARDIAL INFARCTION THROUGH EXPLORATION OF  
CARDIOPROTECTIVE ELEMENTS FOUND IN BONE MARROW  
STEM CELLS AND IL-15**

By: Vanessa Aguilera  
Cell and Molecular Biology  
Faculty Advisor: Dr. Carmen R. Domingo



*Growing a new kind of scientist.*  
The Science Education Partnership & Assessment Laboratory  
San Francisco State University

The Science Education Partnership and Assessment Laboratory (SEPAL) partners scientists and teachers to improve science teaching and learning for students of all ages. SEPAL offers a variety of programs, courses, and research opportunities. SEPAL programs presenting posters for the College of Science and Engineering Poster Showcase 2010 include:

**SEPAL Teaching Assistantship Program  
Science Partners in K-12 Education (SPIKE) Program  
Spectrum Program**

WEBSITE: <http://sepal.sfsu.edu/>



Project #1: **Using Inquiry to Explore Biology: Experiences from a Scientist-Teacher Partnership in High School Biology**  
SFSU Graduate Student: Holly Archer (Biology)  
SFUSD Teacher: Erika Schenck, Marshall High School  
SFSU Faculty Advisors: Dr. Ravinder Sehgal and Dr. Kimberly D. Tanner  
(SEPAL Teaching Assistantship Program)

Project #2: **Science, As Seen Throughout the Eyes of Hilltop High School's Pregnant Teens**  
SFSU Graduate Student: Jenny Carlson (Biology)  
SFUSD Teacher: Annie Darling, Hilltop High School  
SFSU Faculty Advisors: Dr. Ravinder Sehgal and Dr. Kimberly D. Tanner  
(SEPAL Teaching Assistantship Program)

Project #3: **Student Voices: A Science Teaching Partnership from a Student's Perspective**  
SFSU Graduate Student: Tina Cheng (Biology)  
SFUSD Teacher: Karen Clayman, A.P. Giannini Middle School  
SFSU Faculty Advisors: Dr. Vance Vredenburg and Dr. Kimberly D. Tanner  
(SEPAL Teaching Assistantship Program)

Entry Number: 124 UP

**POWERED LAZY BOY**

By: John Wudyts, Shiftah Einollahzadeh, Andrew Damele, Jeremy Martinez,  
Haris Alijagic, Laith Alawad, Hemel Yahya, and Emerson Malca

Mechanical Engineering

Faculty Advisors: Dr. George Anwar and Dr. Dipendra Sinha

Entry Number: 125 UP

**VERTICAL AXIS WIND TURBINE**

By: Rochelle Desamito, Judith Krischke, and Richard Wang

Mechanical Engineering

Faculty Advisor: Dr. Kwok-Siong Teh

Entry Number: 126 UP

**SWITCHABLE V.O./V.C. PROSTHETIC HAND**

By: Timothy Sullivan, Nicolas Dibenedetto, and Gandiva Moss

Mechanical Engineering

Faculty Advisor: Dr. Kwok-Siong Teh

Entry Number: 127 UP

**THIN FILMS OF IRON II DISULFIDE (PYRITE) FOR  
PHOTOVOLTAIC APPLICATIONS**

By: Diana Mars

Chemistry

Faculty Advisor: Dr. Andrew S. Ichimura

Entry Number: 128 UP

**VISIBLE-WAVELENGTH INTEGRATED SPECTROSCOPY OF  
BINARY ASTEROIDS**

By: Abigail Elisabeth Reiss

Astrophysics

Faculty Advisor: Dr. Adrienne Cool and Dr. Franck Marchis

Entry Number: 129 UP

**BEAM REFLECTION BY NEGATIVE DEFECTS IN  
PHOTONIC LATTICES**

By: Alexandra Miller

Physics

Faculty Advisor: Dr. Zhigang Chen

Entry Number: 130 UP

**NON-CRYSTALLINE PHOTONIC BANDGAP MATERIAL STUDY**

By: Kazue Matsuyama and Polin Yadak

Physics

Faculty Advisor: Dr. Weining Man

Entry Number: 11 GL

**DIET AND FOOD WEBS OF THE CALIFORNIA RED-LEGGED FROG  
(RANA DRAYTONII)**

By: Meghan Bishop

Conservation Biology

Faculty Advisor: Dr. Robert Drewes

Entry Number: 12 GL

**THE EFFECTS OF A NEWLY DISCOVERED PARASITE (APOCEPHALUS  
BOREALIS) ON THE HEALTH OF HONEY BEE COLONIES**

By: Andrew Core, Jonathan Ivers, Chris Quock, Dr. Chris Smith, Travis

Siapno, and Dr. John Hafernik

Conservation Biology

Faculty Advisor: Dr. John Hafernik

Entry Number: 13 GL

**BIODIVERSITY AND PHYLOGENY OF MARASMUIS OF NOR YUN-  
GAS, BOLIVIA**

By: Brennan Wenck

Ecology and Systematics Biology

Faculty Advisor: Dr. Dennis Desjardin

Entry Number: 14 GL

**EFFECTS OF FOREST FRAGMENTATION ON THE PREVALENCE OF  
BLOOD PARASITES IN BIRDS OF COSTA RICA**

By: Holy Archer, Cagan Sekercioglu, and Chase Mendenhall

Ecology and Systematics Biology

Faculty Advisor: Dr. Ravinder Sehgal

Entry Number: 15 GL

**PREVALENCE OF BLOOD PARASITES IN THE AVIFAUNA OF SO-  
CORRO ISLAND, MÉXICO.**

By: Jenny Carlson

Ecology and Systematics Biology

Faculty Advisor: Dr. Ravinder Sehgal

Entry Number: 16 GL

**THE RELATIONSHIP BETWEEN MATERNAL CARE AND EGG CANNI-  
BALISM IN A COLONIAL EARWIG ANISOLABIS MARITIMA  
(DERMAPTERA: ANISOLABIDIDAE)**

By: Julie S. Miller

Ecology and Systematics Biology

Faculty Advisor: Dr. Andrew G. Zink



Entry Number: 17 GL

**IS THE PACIFIC CHORUS FROG CARRYING A DEADLY FUNGUS?**

By: Natalie Reeder

Ecology and Systematics Biology  
Faculty Advisor: Dr. Vance Vredenburg

Entry Number: 18 GL

**ROLE OF A PATHOGENIC FUNGUS IN THE DECLINE OF PLETHODONTID SALAMANDERS IN MEXICO AND GUATEMALA**

By: Tina Cheng

Ecology and Systematics Biology  
Faculty Advisor: Dr. Vance Vredenburg

Entry Number: 19 GL

**CHARACTERIZING ECDYSIS BEHAVIOR IN THE STICK INSECT, *CARAUSIUS MOROSUS***

By: Andrew Carriman

Physiology and Behavioral Biology  
Faculty Advisor: Dr. Megumi Fuse

Entry Number: 20 GL

**EFFECTS OF FOOD AVAILABILITY ON NEUROGENESIS IN THE TOBACCO HORNWORM, *MANDUCA SEXTA***

By: Anita Yip

Physiology and Behavioral Biology  
Faculty Advisor: Dr. Chris Moffatt

Entry Number: 21 GL

**ADENOSINE REGULATES DEVELOPMENT DURING TISSUE REPAIR**

By: Cleopa Omondi, Sayed Miry, and Louie Vermos

Physiology and Behavioral Biology  
Faculty Advisor: Dr. Megumi Fuse

Entry Number: 22 GL

**CHARACTERIZING CGMP REGULATION DURING ECDYSIS IN *MANDUCA SEXTA***

By: Sabina Bera and Jared Geibig

Physiology and Behavioral Biology  
Faculty Advisor: Dr. Megumi Fuse



Entry Number: 117 UP

**MIDI ACTUATED ROBOTIC VIBRAPHONE**

By: Tim O'Keefe, Brock Roland, and Michael McIntyre  
Electrical and Mechanical Engineering  
Faculty Advisors: Dr. Tom Holton and Dr. Ed Cheng

Entry Number: 118 UP

**MECHANICAL PHOTOSENSORY PATIO UMBRELLA**

By: Salim Saikaly, Laith Alawad, and Muataz Hamad  
Mechanical and Electrical Engineering  
Faculty Advisors: Larry Klingenberg and Dr. Tom Holton

Entry Number: 119 UP

**RACE CAR**

By: Andrew McBrian Cole, Kayvon Shakeri, Kevin Gee, and Prasith Sip  
Mechanical Engineering  
Faculty Advisor: Dr. Kwok-Siong Teh

Entry Number: 120 UP

**DRINK MIXER**

By: Andrew Navarro and Christian Fernandez  
Mechanical Engineering  
Faculty Advisor: Dr. Tom Holton

Entry Number: 121 UP

**AUTOMATIC BASKETBALL RETURNER**

By: Brandon Leaupepetele and Hieu Vo  
Mechanical Engineering  
Faculty Advisor: Dr. Dipendra Sinha and Dr. Kwok-Siong Teh

Entry Number: 122 UP

**CLOSED-LOOP FEEDBACK CONTROL OF A HIGH FREQUENCY INDUCTIVE HEATING SYSTEM FOR NANOMATERIAL SYNTHESIS**

By: Curtis Hilger and Joachim Pedersen  
Mechanical Engineering  
Faculty Advisor: Dr. Kwok-Siong Teh

Entry Number: 123 UP

**ZINC-CATALYZED, RAPID SYNTHESIS OF ULTRA LONG SILICA NANOFIBERS BY**

By: Joachim Pedersen  
Mechanical engineering  
Faculty Advisor: Dr. Kwok-Siong Teh

Entry Number: 110 UP  
**HYBRID RADIO CONTROL CAR**  
By: Andy Kwan and Richard Solomon  
Electrical Engineering  
Faculty Advisor: Dr. Tom Holton

Entry Number: 111 UP  
**WIRELESS TEMPERATURE DISPLAY AND CONTROL SYSTEM**  
By: Billy Hui and Aung Tint  
Electrical Engineering  
Faculty Advisors: Dr. Tom Holton, Dr. George Anwar, and Dr. Hao Jiang

Entry Number: 112 UP  
**MOUSE**  
By: Farah Soltane and Thomas Pedersen  
Electrical Engineering  
Faculty Advisors: Mutlu Ozer and Dr. Tom Holton

Entry Number: 113 UP  
**AN EXTERNALLY CONTROLLED MAGNETIC DISC SCREW DEVICE**  
By: Fersan Winardja and William Diep  
Electrical Engineering  
Faculty Advisors: Dr. Tom Holton, Dr. Kwok-Siong Teh, and Dr. Hao Jiang

Entry Number: 114 UP  
**RCL METER**  
By: Hezekiel Randolph  
Electrical Engineering  
Faculty Advisor: Dr. Tom Holton

Entry Number: 115 UP  
**AUDIO SWITCHER**  
By: John Laberinto, Cassidy Louie, and Jeff Constantino  
Electrical Engineering  
Faculty Advisors: Dr. Tom Holton and Dr. Hao Jiang



Entry Number: 116 UP  
**SEARCH ROVER**  
By: Michael Arce, David Chin, Cianan Duncan,  
Javier Fernandez, and John Wudyts  
Electrical and Mechanical Engineering  
Faculty Advisor: Dr. Kwok-Siong Teh

Entry Number: 23 GL  
**CONFIRMATION OF DICISTRONIC GENE STRUCTURES IN SEVERAL DROSOPHILID SPECIES**  
By: Henry Hunter  
Cell and Molecular Biology  
Faculty Advisor: Dr. Chris Smith

Entry Number: 24 GL  
**GLOBAL ANALYSIS OF HISTONE SUBTYPE COMPOSITION IN C. ELEGANS SPERM USING MudPIT MASS SPECTROMETRIC ANALYSIS**  
By: Michael Yee  
Cell and Molecular Biology  
Faculty Advisor: Dr. Diana Chu

Entry Number: 25 GL  
**MOLECULAR BASIS FOR HOST SPECIFICITY IN AVIAN MALARIA**  
By: Criseyda Martinez  
Microbiology  
Faculty Advisor: Dr. Ravinder Sehgal

Entry Number: 26 GL  
**GENOMIC ANALYSIS OF THE AMMONIA OXIDIZING ARCHAEON NITROSOCALDUS YELLOWSTONII HL72**  
By: Hope M. Gray, N. Pinel, M.N. Ashby, C.B. Walker, H. Urakawa, C.W. Schadt, L. Sayavedra-Soto, and D.A. Stahl  
Microbiology  
Faculty Advisor: Dr. Jose R de la Torre

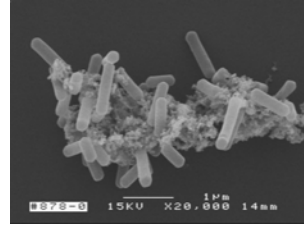
Entry Number: 27 GL  
**HPV**  
By: Marilyn Walton and Devi Paulvannan  
Microbiology  
Faculty Advisor: Dr. Lily Chen

Entry Number: 28 GL  
**CD8+ CELL NONCYTOTOXIC ANTIVIRAL RESPONSE SUPPRESSES HIV-1 TRANSCRIPTION IN PRIMARY MONOCYTE-DERIVED-MACROPHAGES**  
By: Michelle Wray  
Microbiology  
Faculty Advisor: Dr. Jay Levy and Dr. Frank Bayliss

Entry Number: 29 GL  
**INHIBITION OF NITRIFICATION IN  
AMMONIA-OXIDIZING ARCHAEA**

By: Sandra Melloy  
Microbiology

Faculty Advisor: Dr. Jose de la Torre



Entry Number: 30 GL  
**THE ROLE OF THE C42-C58 DISULFIDE BRIDGE IN  
A CATALYTICALLY ACTIVE THREONINE PROTEASE VARIANT BY  
MOLECULAR DYNAMICS SIMULATION**

By: Trevor Gokey  
Computing for Life Sciences  
Faculty Advisor: Dr. Anton Guliaev

Entry Number: 31 GL  
**HYDROLYSIS OF  $\alpha$ -HALO AND  $\alpha$ -CYANO PYRIDINIUM:  
A MODEL FOR OROTIDINE 5'-MONOPHOSPHATE  
DECARBOXYLASE (OMP DECARBOXYLASE)**

By: Sha Huang  
Biochemistry  
Faculty Advisor: Dr. Weiming Wu

Entry Number: 32 GL  
**S-NITROSYLATION OF SOLUBLE GUANYLATE CYCLASE**  
By: Kensuke Yamamoto, Jasmin Kristianto, and Stephanie Wood  
Biochemistry

Faculty Advisor: Dr. Nancy Counts Gerber

Entry Number: 33 GL  
**EFFECT OF THE HEME POCKET ENVIRONMENT ON THE NITRITE  
REDUCTASE ACTIVITY OF SW MYOGLOBIN**

By: Lea Lough, Kay Saw, Benjamin Lintner, and Ignacio López-Peña  
Biochemistry

Faculty Advisor: Dr. Raymond Esquerra

Entry Number: 34 GL  
**THE SIGNIFICANCE OF SECOND SHELL INTERACTIONS IN  
SERINE PROTEASE FUNCTION**

By: Lei Zhang  
Biochemistry  
Faculty Advisor: Dr. Teaster Baird, Jr

Entry Number: 104 UP  
**CONCRETE CANOE**

By: My-Linh Nguyen, Christine Hunt, Nick Kim, Lindsay Green,  
Eoin Sheeran, Alvin Piano, James Esoimeme, Jose Preciado, and Julie Leong  
Civil Engineering

Faculty Advisors: Dr. Cheng Chen and Dr. Timothy D'Orazio

Entry Number: 105 UP  
**NATIONAL STUDENT STEEL BRIDGE COMPETITION**

By: Samuel Fitzer, Chris O'Gara, Chris Pioli, Jonathon Tai,  
Marissa Silvas, John Crain, Julian Jaramillo,  
Nadia Berumen, Lester Aquino, and Cindy Lu  
Civil Engineering

Faculty Advisor: Dr. Cheng Chen

Entry Number: 106 UP  
**BIORADICAL BIOSAND FILTER: AN IMPROVED PERFORMANCE AND  
DELIVERY SYSTEM FOR SAFE DRINKING WATER**

By: Steven Chua, Gloria Fernandez, David Dip,  
Chris Kekicheff, and Diana Louie  
Civil Engineering

Faculty Advisor: Dr. John Dracup and Dr. Elahe Enssani

Entry Number: 107 UP  
**2010 NATIONAL TIMBER BRIDGE COMPETITION**

By: Tony Tam, Shiu Mak, Kakiu Ching, Ailin Liu, Jiayi Fu,  
Nicole Salde, and Shu Feng Yu  
Civil Engineering

Faculty Advisor: Dr. Cheng Chen

Entry Number: 108 UP  
**CARDIO VEST**

By: Jose Emerson Malca Gutierrez and Hemel Yahya  
Computer Engineering

Faculty Advisor: Larry Klingenberg

Entry Number: 109 UP  
**PROJECT R.A.M.T.A.P.**

By: Shawn Yee  
Computer Engineering

Faculty Advisors: Keith Mueller and Dr. Tom Holton



Entry Number: 98 UL  
**PROTEIN DYNAMICS USING COMPUTATIONAL  
CHEMISTRY APPROACH. STRUCTURAL FEATURES OF  
THE WILD TYPE SERINE PROTEASE**

By: Shi Choong  
Chemistry  
Faculty Advisor: Dr. Anton Guliaev

Entry Number: 99 UL  
**A CONTRIBUTION TO THE FIGHT AGAINST CANCER:  
SYNTHESIS AND CHARACTERIZATION OF  
LYSINE-SUBSTITUTED PHEOPHORBIDE-A IN THE QUEST FOR A  
SUPERIOR PHOTSENSITIZER**

By: Viviana Cervantes  
Chemistry  
Faculty Advisor: Dr. Uschi Simonis

Entry Number: 100 UP  
**WOODBIDGE DESIGN**  
By: Reza Hashemzade, Alisina Oshaghi, Joey Aduviso,  
Jose Garcia, Leyla Pirnia, and Cristina Aragon  
Civil and Environmental Engineering  
Faculty Advisors: Dr. Timothy D'Orazio and Dr. Cheng Chen

Entry Number: 101 UP  
**FOUNDATION DESIGNS**  
By: Abdirahman Adam, Jennifer Smith, Jennifer Tran,  
Johnny Hoang, Wubet Woldemichael, and Yue Ming Huang  
Civil Engineering  
Faculty Advisor: Dr. Timothy D'Orazio

Entry Number: 102 UP  
**SFSU TIMBER TRUSS BRIDGE**  
By: Alex Osorio, Noor Hasan, Patrick Ledesma, Chor Sum Wong,  
George Khaelilieh, and Hamed Khan Zadran  
Civil Engineering  
Faculty Advisor: Dr. Cheng Chen



Entry Number: 103 UP  
**THE SUPER AWESOME CONSULTANTS**  
By: James O'Connell, Joshua Tse, Colby Lum,  
Tony Cheung, and Nik Favretto  
Civil Engineering  
Faculty Advisor: Dr. Timothy D'Orazio

Entry Number: 35 GL  
**REFINING THE CATALYTIC MACHINERY OF AN ENGINEERED  
THREONINE PROTEASE BY SITE-DIRECTED MUTAGENESIS**

By: Mie A. Lansang  
Biochemistry  
Faculty Advisor: Dr. Teaster Baird, Jr.

Entry Number: 36 GL  
**BIOCHEMICAL CHARACTERIZATION OF  
STYRENE OXIDE ISOMERASE FROM PSEUDOMONAS PUTIDA S12**

By: Sindy Liao  
Biochemistry  
Faculty Advisor: Dr. George Gassner

Entry Number: 37 GL  
**CONFORMATIONAL STUDIES OF SOLUBLE GUANYLATE CYCLASE  
USING TIME-RESOLVED FLUOROMETRY**

By: Stephanie M. Wood  
Biochemistry  
Faculty Advisor: Dr. Nancy Counts Gerber

Entry Number: 38 GL  
**EXPLORING INDIRECT HYDROPHOBIC INTERACTIONS IN  
TRYPSIN**

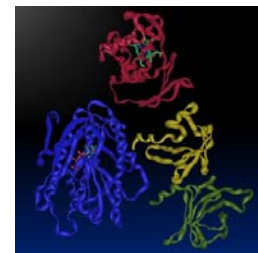
By: Raniel R. Alcantara  
Cell and Molecular Biology  
Faculty Advisor: Dr. Teaster Baird, Jr.

Entry Number: 39 GL  
**LOW-TEMPERATURE FABRICATION OF ANATASE FILMS WITH  
TUNABLE THICKNESS AND MORPHOLOGY**

By: Shirin M. Usmani and Diana Mars  
Chemistry  
Faculty Advisor: Dr. Andrew S. Ichimura

Entry Number: 40 GL  
**REMEDIATION OF NITROAROMATIC  
POLLUTANTS BY REDUCTION AND  
SURFACE ADSORPTION**

By: Yogita Patil  
Chemistry  
Faculty Advisor: Dr. Bruce Manning



Entry Number: 41 GP  
**CLOUD COMPUTING FOR DATA INTENSIVE APPLICATION**  
By: Jinesh Lalan  
Computer Science  
Faculty Advisors: Dr. Dragutin Petkovic, Mike Wong,  
and Dr. Ljubomir Buturovic

Entry Number: 42 GP  
**THREE DIMENSIONAL RECONSTRUCTION OF  
KNOTS AND KNOTTED PARTICLES**  
By: John Collins  
Computer Science  
Faculty Advisor: Dr. Javier Arsuaga

Entry Number: 43 GP  
**EFFICIENT FINITE DIFFERENCE-BASED SOUND SYNTHESIS  
USING GPUS**  
By: Marc Sosnick  
Computer Science  
Faculty Advisor: Dr. Bill Hsu

Entry Number: 44 GP  
**IMPROVING FEATURE: ACADEMIC BIOINFORMATICS SOFTWARE  
FOR STANFORD UNIVERSITY**  
By: Pracheer Sehrawat, Gemma Lee Fu-Sun, Mandar Modgi,  
Trevor Blackstone, and Gurgen Tumanyan  
Computer Science  
Faculty Advisors: Dr. Dragutin Petkovic, Dr. Russ Altman, and Mike Wong

Entry Number: 45 GP  
**AUTOMATIC LESSON PLANNER**  
By: Tingting Sun  
Computer Science  
Faculty Advisors: Dr. Kaz Okada and Dr. Susan Courey

Entry Number: 46 GP  
**MACHINE LEARNING BASED  
MEDICAL IMAGE REGISTRATION**  
By: Yang Zhao  
Computer Science  
Faculty Advisor: Dr. Kaz Okada



Entry Number: 92 UL  
**INCREASED OXIDATIVE STRESS IN PEOPLE WITH DIABETES:  
THE EFFECT OF GLYCATION ON THE KINETICS OF  
THE ADULT HUMAN HEMOGLOBIN**  
By: Yadiel Kinfu  
Biochemistry  
Faculty Advisor: Dr. Raymond Esquerra

Entry Number: 93 UL  
**SYNTHESIS OF TRIMETHYLLYSINE-SUBSTITUTED  
PHEOPHORBIDE-A SILICON COMPLEX**  
By: Anthony Trinh  
Biochemistry  
Faculty Advisor: Dr. Uschi Simonis

Entry Number: 94 UL  
**PHOTODYNAMIC THERAPY OF CANCER DISEASES SYNTHESIZE OF  
METHOXY L-LYSYLPYROPHEOPHORBIDE-A AND ITS ZINC METAL**  
By: Abdelaziz Mtaoua  
Chemistry  
Faculty Advisor: Dr. Uschi Simonis

Entry Number: 95 UL  
**NITRITE REDUCTASE ACTIVITY OF GLYCATED HEMOGLOBIN**  
By: Damon Robles and Kay Saw  
Chemistry  
Faculty Advisor: Dr. Raymond Esquerra

Entry Number: 96 UL  
**RAPID IDENTIFICATION OF COUNTERFEIT DRUGS  
VIA X-RAY FLUORESCENCE SPECTROMETRY**  
By: Heather Gregory and Charlie Bupp  
Chemistry  
Faculty Advisor: Dr. Pete Palmer



Entry Number: 97 UL  
**Fe ANALYSIS OF BEER VIA HAND HELD XRF  
USING CATION EXCHANGE RESINS**  
By: Matthew Sanchez  
Chemistry  
Faculty Advisor: Dr. Pete Palmer

Entry Number: 86 UL  
**COMPARISON OF DEUTERIUM MONOXIDE AND HYDROGEN MONOXIDE SOLVENT EFFECTS ON DIFFERENT SPECIES OF MYOGLOBIN LIGAND REBINDING AFTER CO PHOTOLYSIS**

By: Natalie Davis  
Biochemistry  
Faculty Advisor: Dr. Raymond Esquerra

Entry Number: 87 UL  
**ANALYTICAL PROTOCOLS FOR DETERMINATION OF PHTHALATES IN TOYS.**

By: Patience Adagba  
Biochemistry  
Faculty Advisor: Dr. Pete Palmer

Entry Number: 88 UL  
**SERINE PROTEASE: TRYPSIN VARIANT F41A**

By: Quynh Nguyen  
Biochemistry  
Faculty Advisor: Dr. Teaster Baird, Jr. and Mie Lansang

Entry Number: 89 UL  
**INTRODUCING NOVEL SUBSTRATE SELECTIVITY INTO TRYPSIN THROUGH REDESIGN**

By: Sayeeda P. Najibi  
Biochemistry  
Faculty Advisor: Dr. Teaster Baird, Jr

Entry Number: 90 UL  
**ARYL-HETEROARYL UREAS (AHUs) BASED ON 4-AMINOQUINALDINE AS INHIBITORS OF THE INSULIN-LIKE GROWTH FACTOR RECEPTOR**

By: Terrence O'Brien  
Biochemistry  
Faculty Advisor: Dr. Marc Anderson

Entry Number: 91 UL  
**USING A YEAST SCREENING TO IDENTIFY SIRT INHIBITORS FROM MARINE-DERIVED ACTINOMYCETES**

By: Van Pham  
Biochemistry  
Faculty Advisor: Dr. Taro Amagata

Entry Number: 47 GP  
**a-TAT (ELECTRONIC TEAMWORK ASSESSMENT TOOL)**

By: Gurdeep Singh, Sanket Parab, Ravi Soni, and Srijita Shrestha  
Computer Science  
Faculty Advisors: Dr. Dragutin Petkovic, James Wong, and Gary Thompson

Entry Number: 48 GP  
**DEVELOPMENT OF A STAINED CELL NUCLEI COUNTING SYSTEM**

By: Nirranjan Timilsina  
Software Engineering  
Faculty Advisor: Dr. Kaz Okada

Entry Number: 49 GP  
**PODCASTING IN MOBILE WiMAX: ANALYSIS AND IMPLICATIONS**

By: Saurabh Kumar  
Electrical Engineering  
Faculty Advisor: Dr. Hamid Shahnasser

Entry Number: 50 GP  
**RELIABILITY ANALYSIS OF POWER GATED SRAM UNDER COMBINED EFFECTS OF NBTI AND PBTI IN NANO-SCALE CMOS**

By: Anuj Pushkarna  
Electrical Engineering  
Faculty Advisor: Dr. Hamid Mahmoodi

Entry Number: 51 GP  
**MAC PROTOCOLS FOR VANETS: ANALYSIS AND THEORETICAL IMPLEMENTATION**

By: Shankar Yanamandram  
Electrical Engineering  
Faculty Advisor: Dr. Hamid Shahnasser

Entry Number: 52 GP  
**COMPARATIVE RELIABILITY ANALYSIS OF SRAM CELL DESIGNS IN NANO-SCALE TECHNOLOGIES**

By: Shreyas Kumar Krishnappa  
Electrical Engineering  
Faculty Advisor: Dr. Hamid Mahmoodi

Entry Number: 53 GP  
**VERSATILE NETWORKABLE ROBOT**

By: Gregory S. Kielian, Di Lan, Xiao Wang, Tao Yu, and Shiyu Zhou  
Engineering  
Faculty Advisor: Dr. Seapahn Megerian

Entry Number: 54 GP  
**INTELLIGENT VEHICLE MOBILITY TCL SCRIPT GENERATOR FOR  
NS-2 SIMULATION**

By: Jia Huang  
Engineering  
Faculty Advisor: Dr. Hamid Shahnasser

Entry Number: 55 GP  
**ANONYMOUS COMMUNICATION IN MOBILE AD HOC NETWORKS**

By: Avisia Tehrani  
Engineering  
Faculty Advisor: Dr. Hamid Shahnasser

Entry Number: 56 GP  
**THE DEVELOPMENT OF WiGig VEHICULAR AD HOC NETWORK  
WITH THE IMPLEMENTATION OF VI-FI AND VANETS**

By: Alan Chan  
Engineering  
Faculty Advisor: Dr. Hamid Shahnasser

Entry Number: 57 GP  
**CONVEXITY OF DOMAINS OF BEST APPROXIMATION**

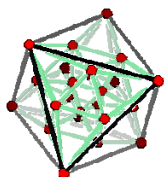
By: Bitia Nosratieh  
Mathematics  
Faculty Advisor: Dr. Yitwah Cheung

Entry Number: 58 GP  
**A MAXIMUM PRINCIPLE FOR THE WEIGHTED BERGMAN SPACE**

By: David Bangor  
Mathematics  
Faculty Advisor: Dr. Alex Schuster

Entry Number: 59 GP  
**GENERALIZED ORDER AND CHAIN POLYTOPES**

By: Dido Salazar-Torres  
Mathematics  
Faculty Advisor: Dr. Thomas Bliem and Dr. Federico Ardila



Entry Number: 60 GP  
**VARIETY OF FINITARY C-ALGEBRA  
HOMOMORPHISMS**

By: Jon Yaggie  
Mathematics  
Faculty Advisor: Dr. Joseph Gubeladze

Entry Number: 81 UL  
**GENOMIC SIGNATURES ASSOCIATED WITH RECURRENCE IN  
BREAST CANCER PATIENTS**

By: Alex Pankov  
Mathematics  
Faculty Advisor: Dr. Javier Arsuaga

Entry Number: 82 UL  
**USING THE MATHEMATICS OF TANGLES TO  
STUDY THE MECHANISM THE CELL EMPLOYS TO  
MAINTAIN GENETIC STABILITY**

By: Mousa Rebouh  
Mathematics  
Faculty Advisor: Dr. Mariel Vazquez

Entry Number: 83 UL  
**DETERMINING THE KINETIC MECHANISM OF STYRENE  
MONOOXYGENASE REDUCTASE**

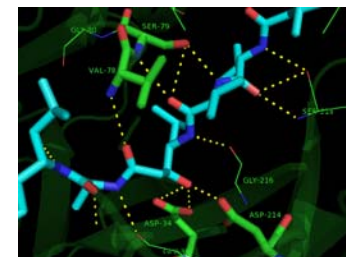
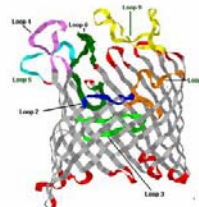
By: David Canio  
Biochemistry  
Faculty Advisor: Dr. George Gassner

Entry Number: 84 UL  
**DETERMINING THE CONFORMATIONAL EFFECTS CAUSED BY  
CO AND YC-1 BINDING TO SOLUBLE GUANYLATE CYCLASE**

By: Ignacio López-Peña and Jasmine Kristianto  
Biochemistry  
Faculty Advisors: Dr. Nancy Counts Gerber and Dr. Raymond Esquerre

Entry Number: 85 UL  
**DEVELOPMENT OF A BROAD-BASED ASSAY TO  
MEASURE FLAVIN TRANSFER EFFICIENCY IN  
THE STYRENE DEGRADATION PATHWAY**

By: Matt Gallagher  
Biochemistry  
Faculty Advisor: Dr. George Gassner



## Projects #76 – 130 are from Undergraduate Students

Entry Number: 76 UL

### **ECDYSIS TRIGGERING HORMONE INDUCES FICTIVE PRE-ECDYSIS AND ECDYSIS IN INTERMOLT PERIOD OF TOBACCO HORNWORM NERVOUS SYSTEMS**

By: Ariel Aveo and Tyson Buis  
Physiology and Behavioral Biology  
Faculty Advisor: Dr. Megumi Fuse

Entry Number: 77 UL

### **SPATIAL PATTERNING OF MUSCLE FIBERS IN XENOPUS LAEVIS**

By: Armbien Sabillo and Vanja Krneta-Stankic  
Physiology and Behavioral Biology  
Faculty Advisor: Dr. Carmen R. Domingo

Entry Number: 78 UL

### **ROLE OF ROR1 IN THE DEVELOPING CHICK NEURAL TUBE**

By: Camilla Teng  
Cell and Molecular Biology  
Faculty Advisor: Dr. Laura Burrus

Entry Number: 79 UL

### **LOSS OF MEMBRANE RAFTS DEREGULATES INTRACELLULAR FREE CALCIUM IN C2C12 MYOBLASTS/MYOTUBES**

By: Romica Kerketta and Seung Jong Lee  
Cell and Molecular Biology  
Faculty Advisor: Dr. Wilfred Denetclaw

Entry Number: 80 UL

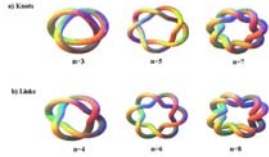
### **ECTODERM EXPRESSING DYNAMIC LEVELS OF Ca<sup>2+</sup> AND NO RESULT IN PATTERNS OF CELL DEATH TO COINCIDE WITH SIGNALING ACTIVITY BY THESE MESSENGERS FOR CHICKEN EMBRYO DEVELOPMENT**

By: Shivalee Gujarathi and Seung Jong Lee  
Cell and Molecular Biology  
Faculty Advisor: Dr. Wilfred Denetclaw

Entry Number: 61 GP

### **INVARIANCE OF THE SIGN OF THE AVERAGE SPACE WRITHE OF FREE AND CONFINED KNOTTED POLYGONS**

By: Juliet Portillo, Rob Scharein, and Dr. Javier Arsuaga  
Mathematics  
Faculty Advisor: Dr. Mariel Vazquez



Entry Number: 62 GP

### **INTERPOLATION IN THE UNIT DISK**

By: Tim Wertz  
Mathematics  
Faculty Advisor: Dr. Alex Schuster

Entry Number: 63 GP

### **AN EXPLORATION OF BFACF ENTROPY & BIOLOGICAL APPLICATIONS OF SELF-AVOIDING POLYGONS IN THE SIMPLE CUBIC LATTICE**

By: Zoe Talbot  
Mathematics  
Faculty Advisor: Dr. Yitwah Cheung, Dr. Rob Scharein, and Dr. Mariel Vazquez

Entry Number: 64 GP

### **INFERRING TREE TOPOLOGIES USING PHYLOGENETIC INVARIANTS**

By: Addie Evans  
Mathematics  
Faculty Advisor: Dr. Serkan Hosten

Entry Number: 65 GP

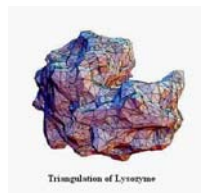
### **CLASSIFICATION OF EHRHART QUASI-POLYNOMIALS OF HALF-INTEGRAL POLYGONS**

By: Andrew Herrmann  
Mathematics  
Faculty Advisor: Dr. Matthias Beck

Entry Number: 66 GP

### **THE IMPORTANCE OF THE LEADOFF BATTER**

By: Eric Distad  
Mathematics  
Faculty Advisor: Dr. Serkan Hosten



Entry Number: 67 GP  
**GRAPH OPERATIONS IN TROPICAL GEOMETRY**

By: Eric Douglas Miranda  
Mathematics  
Faculty Advisor: Dr. Serkan Hosten

Entry Number: 68 GP  
**EFFECT OF COAL-FIRED POWER GENERATION ON VISIBILITY IN  
A NEARBY NATIONAL PARK**

By: Jonathan Terhorst  
Mathematics  
Faculty Advisor: Dr. Serkan Hosten

Entry Number: 69 GP  
**A LATTICE POINT ENUMERATION APPROACH TO  
PARTITION IDENTITIES**

By: Nguyen Le  
Mathematics  
Faculty Advisor: Dr. Matthias Beck

Entry Number: 70 GP  
**TORIC IDEALS OF SMALL MATROIDS ARE  
GENERATED IN DEGREE 2**

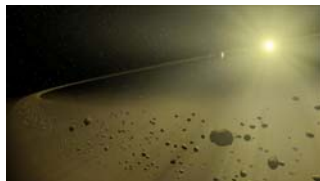
By: Ronald Youtz  
Mathematics  
Faculty Advisor: Dr. Serkan Hosten

Entry Number: 71 GP  
**HUNTING FOR COMPACT GALAXIES**

By: Claire Davy, Zach Hoch, and Stephen Pehrson  
Physics and Astrophysics  
Faculty Advisor: Dr. Ron Marzke

Entry Number: 72 GP  
**OPTICAL TAPPING AND MANIPULATION**

By: Daniel Hernandez  
Physics  
Faculty Advisor: Dr. Zhigang Chen



Entry Number: 73 GP  
**THE IMPACT OF A 5E CONCEPTUAL CHANGE APPROACH TO  
ASTRONOMY EDUCATION**

By: Michelle Krok  
Physics  
Faculty Advisor: Dr. Adrienne Cool and Dr. Kimberly Tanner

Entry Number: 74 GP  
**PHOTONIC BANDGAP MATERIAL WITH  
QUASI-CRYSTALLINE SYMMETRY**

By: Polin Yadak and Kazue Matsuyama  
Physics  
Faculty Advisor: Dr. Weining Man

Entry Number: 75 GP  
**THE MAIN SEQUENCE BINARY FRACTION IN GLOBULAR CLUS-  
TER NGC6397**

By: Srikar Srinath  
Physics  
Faculty Advisor: Dr. Adrienne Cool

